T10/05-416r0 SAS 2.0 – Zone Check and Route Table Clarification

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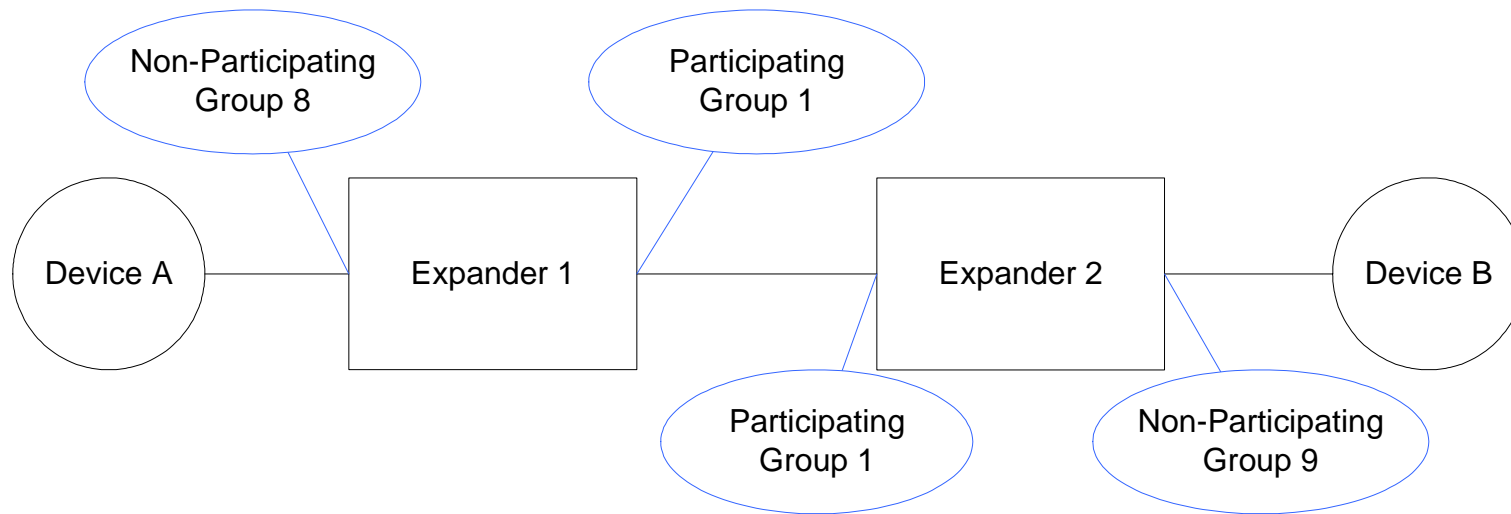**November 4, 2005**

1

▶ Zone Checks May Be Not Required at All Points

  ▸ Checks Performed When All Group Information is Known

▶ Zone Checks are Not Required at Intermediate Points Inside Zoning Service Delivery Subsystem (ZSDS)

  ▸ All Expanders in ZSDS can perform their own Zoning Check

▶ Zone Checks Performed on Participating Subtractive Phys Could be Incorrect

  ▸ Actual Destination Group ID Unknown

Subtractive Route with Unnecessary Zoning Check

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▶ Destination Group ID is Group ID of the Subtractive PHY

- ▶ All opens from Expander 1 to Expander 2 allowed by definition of Group 1
- ▶ Zoning check of Open from A to B unnecessary in Expander 1
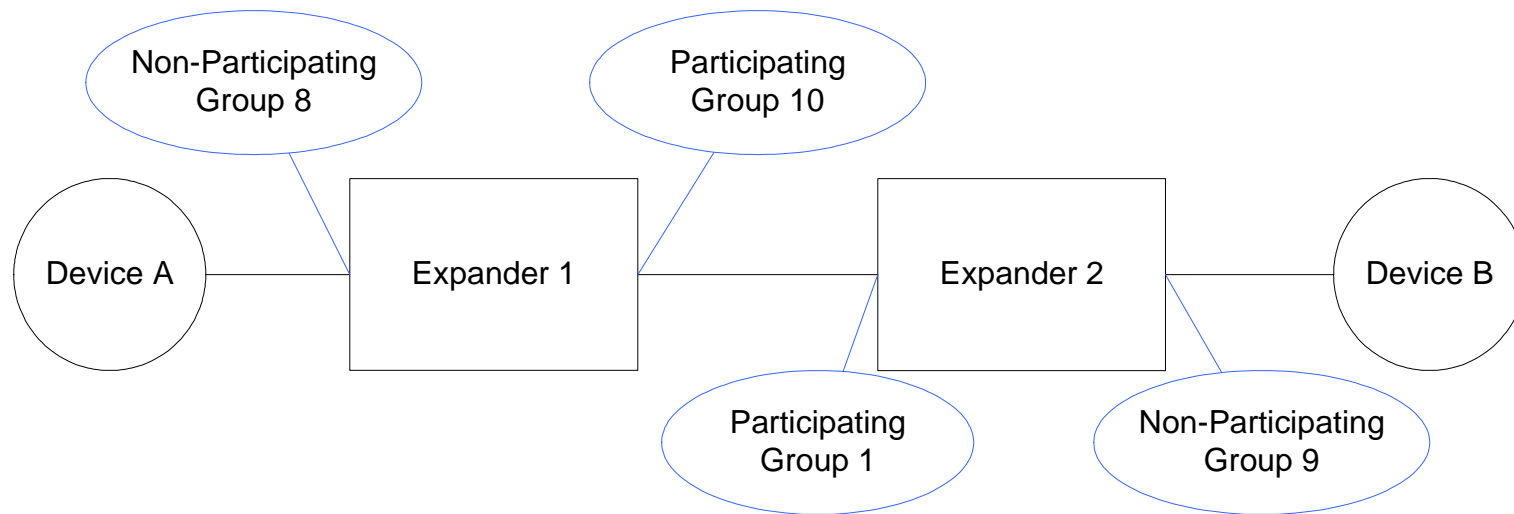

Zone Permission Table
$(8,1) = 1$
$(8,9) = 1$

Subtractive Route with Incorrect Zoning Check Decision

▶ **Destination Group ID is Group ID of the Subtractive PHY**

- ▶ For a Participating Subtractive PHY, this may not be the group of the Destination Device
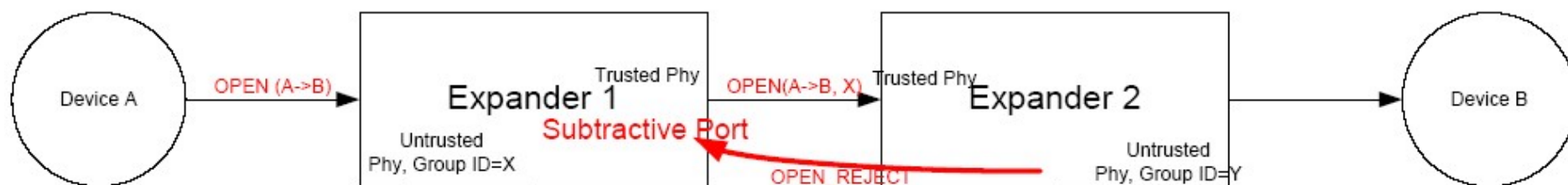- ▶ Open from A to B will fail with OPEN_REJECT(ZONE_VIOLATION) in Expander 1

Zone Permission Table
 (8,9) = 1
 (8,10) = 0

Subtractive Routing Example

Device A — OPEN (A->B) → Expander 1 (Trusted Phy, Untrusted Phy, Group ID=X, Subtractive Port) — OPEN(A->B, X) → Expander 2 (Trusted Phy, Untrusted Phy, Group ID=Y) → Device B

OPEN_REJECT

SGID=X field is inserted at the ingress Phy

Subtractive Routing is enabled.
ECM destination address B not found by direct and table routing method, subtractive routing is used.

OPEN is not rejected by Expander 1

Direct Routing finds a match:
B --> Group Y
Permission Check
$P(X,Y) = 0$
OPEN is rejected by Expander 2

*From 05-186R1 SAS-2: Zoning and Access Control
Read trused as participating and untrusted as non-participating above

When Are Zone Checks Required?

Source Phy Participating, Non-Participating	Destination Phy Participating, Non-Particpating	Destination Route Type (Direct, Table, Subtractive)	Zone Check Required?
Participating	Participating	Any	No
Participating	Non-Participating	Any	Yes
Non-Participating	Non-Participating	Any	Yes
Non-Participating	Participating	Direct	Yes
Non-Participating	Participating	Table	Yes
Non-Participating	Participating	Subtractive	No

Zone Route Table & Discovery Conclusion

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▶ Zoning Route Table May Include Only Devices "Below"

    ▶ Devices Attached to Subtractive Ports use Group of Subtractive Port

    ▶ Final Group of Device connected via Subtractive Ports not known until boundary of Zoning Service Delivery Subsystem

▶ Discovery Algorithms Do Not Need to Change from SAS 1.1

    ▶ Except to Add Group of Each Device to the table